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School Crossing Protection Manual

Traffic Control Devices

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Foreword

The safety of children on their way to and from school is of concern to all. School traffic safety problems must be handled with a minimum of friction and a maximum of effectiveness. The procedures presented in this manual are a consolidation of current professional thinking on the subject of school crossing protection.

It must be noted, however, that this booklet does not select the device or measure which will best accommodate a specific situation. Instead, a uniform process is outlined for the logical selection of those locations where real hazard exists after which engineering judgment is needed to select a measure that will eliminate or reduce the hazard.

It is our hope that this publication will serve as a resource to school administrators, parent-teacher organizations, and others, in establishing and administering a safer and more uniform School Crossing Protection Program. Such a program must be meaningful to the motorist and is vital to the safety of our children.

If, after reading this manual, you have questions or need additional assistance, please let us know or contact one of the resources listed in the back of this booklet under Appendix B.

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Introduction

No traffic casualty arouses greater public outcry and concern than the injury or death of a child going to or from school. No traffic issue provokes parents and civic leaders to plague highway officials with more persistent demands for signs, signals, and markings than the exposure of children to the lethal potential of the motor vehicle, yet there is no phase in the entire field of traffic control exhibiting as many unique departures and deviations from basic national standards as may be found in the operation and protection of school zones and crossings. This gap in the national program of uniformity invites extravagant procedures and confusing regulations and encourages unsound concessions in the use of all traffic control devices.

The safety of the school child is an ever-pressing problem with which traffic engineers and school administrators must cope daily. Requests are received regularly by the State Highway Department, city traffic engineering departments, and by police departments for signs, painted crosswalks, traffic signals, adult guards, school safety patrols, and policemen for school crossing protection. These requests come from individual parents, organized groups, school authorities, and local governing bodies. Most such requests are sincere and represent definite concern for child safety. Most persons sponsoring them feel that the measures advocated are vitally necessary and they are sincerely convinced of their effectiveness. Who would question the fact that the welfare of children is the paramount concern of all parents? It is no surprise that parents will demand any measure which they feel will increase, however slightly, the safety of their youngsters. Officials concerned with traffic safety cannot help but sympathize with the fears of parents and it is almost an overwhelming temptation to accede to all these requests. After all, most traffic safety officials are parents too.

Many practices relative to school child protection have evolved throughout Montana and the nation because each community has treated school crossing protection as a special local hazard problem. Consequently, a variety of types of signs, signals, and methods of control have resulted which are confusing and undoubtedly of questionable aid in solving the very problems with which everyone is vitally concerned; in fact, it has been shown through research that some methods now in use are of little value in the light of present day traffic demands.

The state of Montana has recognized for some time that it is imperative that a firm and uniform policy on school child protection should be followed throughout the state. The thorough and comprehensive studies that have been made of school crossings in Montana, the factual studies made elsewhere in the United States, and the successful policies used in a variety of communities are the basis for the methods recommended in this manual. The program of school crossing protection using signs, signals, markings, school safety patrols, and adult control that is recommended in this manual is a

sound standard policy which all concerned should follow. Through positive and uniform action, increased respect by the driving public can be obtained for school crossing protection. Sound protection can be established by following the procedures described herein, as they will reduce driver confusion, regardless of the geographical or political area traveled. When confusion is reduced for the driver, positive, reasonable action follows, and increased safety for school children is the result.

Basic Principles of School Crossing Safety

The importance of teaching children how to cross streets safely is most basic. Children must be taught early that it is safe to cross any street *only* when there is a safe gap between vehicles and they must be taught to know the difference between a safe and unsafe gap.

This safety education of each child must be started before school age by the parents and they must continue it for many years. It should be supplemented during school years by school authorities assisted by city and state traffic officials, and it must continue until such time as the growing child becomes capable of accepting the responsibility for his own safety. Admittedly, it is difficult to teach children to look in both directions and to wait for a safe gap in traffic before crossing or entering a street. Difficult as it is—there is no other way. There is no mechanical or electronic device which can assume this responsibility for a child. One can assist children to handle this responsibility in their early years with a school safety patrol or a responsible adult crossing guard at some school crossings for some of the street crossings every child must make, but it is impossible to give any child this protection at all times of the day at every crossing. A program of safety education begun by parents and carried forward by both parents and school authorities can make it possible for children to accept responsibility early in life and give each child a better chance of having an accident-free childhood. The responsibility of parents is imperative to the success of any school child safety program, especially with steadily growing traffic volumes.

Children must be taught that they alone are responsible for their safety and that they must be vigilant at all times. They must be convinced that a traffic sign, a traffic signal, or even a school safety patrol does not relieve them of that responsibility; that *all* street crossing locations are dangerous; and that only through safe crossing habits and practices will they remain safe.

It is also important that children be taught to walk correctly on sidewalks and, when they are not available, to walk on the shoulder or the far left side of the street or highway. This, too, is a parent responsibility and should also be a part of safety education in school. *Most children of school age are injured or killed at locations other than at school crossings and other than when going to and from school.* The necessity of teaching children safe practices for their use at all street crossings and other traffic locations and at all times is extremely important, for they need to assume the responsibility for their own safety as soon as possible.

It is true, of course, that the saving of even a few lives and preventing a few injuries is desirable, but it is also possible that protection of the school child pedestrian while going to and from school can be overdone and result in children having a false sense of security in the crossing of streets, which they must do by themselves at other times of the day. It certainly is true that any substantial improvement in the motor vehicle death and injury rate must occur in areas other than school crossings. (See *Pedestrian Accidents, Who, Where, When, Why?*, Appendix B.)

The best approach to the school child safety problem lies, then, in the continuous safety education of each child and a responsible School Crossing Protection Program.

A Realistic School Crossing Protection Program

A basic rule which must be followed in the development of a School Crossing Protection Program is:

It is the responsibility of the child, perhaps aided by school safety patrols, to select proper gaps in traffic and to cross streets safely. It is the responsibility of the community to establish restrictive controls to create adequate gaps where they do not exist.

It is not a public responsibility to lead children across the street, or to tell them when to cross going to and from school. At all other times this remains their responsibility and to assume it part of the time may result in their improper conditioning for assuming this responsibility at other times.

School Crossing Protection Coordinating Committee

The first step in establishing a School Crossing Protection Program is to form an official coordinating committee, which should include representatives from the agencies of the community responsible for engineering, enforcement, and the schools. One of the duties of this committee should be that of developing a School Crossing Protection Program or plan. Official representatives of the parent-teacher associations, safety councils, and other interested groups should also be invited to participate.

School Route Plan

The second step in organizing a School Crossing Protection Program is to select logical routes to be used by school children. This can be done by the Coordinating Committee. Competent personnel, such as the City or State Traffic Engineers, can be used to select the routes for the Coordinating Committee.

A school route plan should be developed for each elementary and kindergarten school area with the purpose of providing maximum protection at minimum cost. An accurate and complete map of the area should be made showing the following information: the location of residences of children; information on sidewalks, shoulders, arterial streets, traffic controls; and natural and easily traversed routes. School routes are selected so as to take advantage of existing sidewalks, adequate shoulders, traffic controls, and natural routes. A route should not be closer than four normal city blocks to another parallel

route in most instances, and the number of routes should be kept at a minimum. Normally only one side of a street is a school route, with that side selected which requires the fewest children to cross arterial streets.

All routes should insofar as possible converge on a school site at one of the adjacent intersections and that location will often be a major crossing. This location should be determined on the basis of the building entrance, the hazards at the adjacent intersections and the number of children using each of the school routes.

At the beginning of each school year members of the Coordinating Committee should initiate programs to instruct children carefully in the use of school routes, inform parents of the routes, and persuade parents to cooperate fully in getting children to use them.

School Route Crossing

Wherever a school route crosses a street, the Coordinating Committee should establish one of three types of crossings. These three categories are: those where protection is unnecessary or unrealistic, those where limited protection is desirable, and those where additional protection is needed. These three categories will cover all crossings.

No Protection

At crossings where there are sufficient gaps in traffic to permit safe crossing by small groups of children and where the children will not be detained for an unreasonable length of time, school crossing protection is unnecessary. At crossings where there are not sufficient gaps for children to cross safely but where there are only a few children crossing, school crossing protection by a public agency may be uneconomical and unrealistic.

For the latter case the solution to the problem may be for the parents of the few children involved to transport them through the crossing or crossings of concern. This situation normally occurs at long distances from the school in areas where few people live and where private transportation to school is necessary, or where parents can conduct their children across a near-home crossing. The minimum number of school children for which the community will supply a gap-created method is a decision each local community must make. All gap-creating techniques are expensive, and a realistic minimum should be established.

For the first case—where safe gaps are available—any number of conditions will create the necessary safe gaps. A low volume of traffic will naturally provide gaps which permit children to cross. Signals or controls at adjacent intersections may create gaps. The tendency of vehicles to move in groups provides gaps.

At this type of intersection or crossing children should have the conditioning and judgment education they need to develop as a safe pedestrian, and the use of crossing guards is unnecessary. Many crossings will fall into this classification.

Limited Protection

Where safe gaps are present but where traffic volumes are substantial, where turning movements are heavy, where speeds are higher, or where larger groups of children are crossing it may be desirable to give limited protection by assigning a trained school safety patrol. The function of the safety patrol is to assist children in the selection of safe gaps and, in an organized manner, act as a leader in guiding groups of children across the street. Although sufficient safe gaps are still appearing, they may not be as frequent; therefore better judgment is needed to select them for larger groups of children. The safety patrol is trained to select these gaps and then permit the children to cross. Student patrols do not control vehicular traffic and should not be permitted to do so. They are not qualified to do so and must not assume this added responsibility. Inasmuch as large groups of children will occur only as one nears the school grounds and since the school patrol must also attend school, such protection is realistic only near the school.

Additional Protection

If adequate gaps are not present to permit safe crossing or if they do not appear in sufficient frequency and if a substantial number of students cross each period, then additional protection is necessary and a public responsibility exists. Where traffic flow is almost continuous, speeds are high, or for some other reason the crossing time is longer than the gap time due to the width of the street or the size of the groups of children, adequate safe gaps must be created.

Provision for adequate gaps may be achieved by several methods. Adult crossing guards, police control, or signalization at the crossing will provide the necessary gaps. However, when adequate gaps do not exist in traffic, a traffic signal should be installed. The use of adult crossing guards and police control should be considered a "temporary measure" for the creation of gaps. The primary function of the type protection used is to control vehicular traffic so as to provide gaps in traffic. The problem of safely crossing the street by proper pedestrian practices remains the responsibility of each school child. Adequate gaps are provided at locations where school routes pass through signalized intersections and no further traffic control is normally required at these crossings.

Crossing Study

After the selection of the school routes, each crossing must be analyzed and classified as requiring no protection, limited protection, or additional protection. This is done after making an analysis of each crossing from data obtained in a survey of these crossings. Any number of persons may be called upon to assist in the survey of these intersections. Personnel from the schools, the police, the highway department, the parent-teachers associations, or other persons may be utilized (see Appendix B). These surveys must be conducted at the times of day when children cross or would cross the intersection. They should be conducted under the sponsorship of the Coordinating Committee and should be performed under the direction of the Traffic Unit Manager of the Montana Department of Highways (see Appendix B).

A survey involves counting of the number of vehicles, a determination of the length and spacing of gaps in traffic, the width of the street and the maximum number of children crossing the street at each gap interval.

Volume Count. The volume count includes all vehicles which cross a path that children would use at the crossing. This includes vehicles approaching the crossing from both directions and vehicles turning to cross this path. The count should be made for each fifteen minutes during each period when children use the crossing. The count may be made by manually tallying the vehicles which cross a school route for each 15-minute period or it may be made by 15-minute automatic recording counters placed at the crossing. The highest 15-minute count obtained for any period when students would normally cross is the volume used for the crossing.

*Width of Street.*The width of the street is the curb-to-curb width for streets or roads without a median strip greater than or equal to six (6) feet in width. For streets with median strips greater than or equal to six (6) feet the width of the street is the curb-to-curb width on each side of the median. In the latter case children make two separate crossings of the road—first from the curb to the median and then the median to the far side curb. For streets without curbs the width should be measured from six feet from the edge of the pavement to a corresponding point on the opposite side.

Size of Groups Crossing. The number of children who use the crossing is determined, preferably from actual counts of children using the crossing or by an evaluation of where children live who would use the crossing. The total number crossing during each period of the day and the times of day during which these crossings are made or should be made are determined for each location. This will be different for crossings distant from the school than for crossings near the school. The typical maximum number of children who cross at one time should be determined from actual observation. The term "typical maximum" is not meant to be the absolute rare maximum observed, but the maximum number which occurs at least once during most days. The size of the group will typically be larger near the schools than for crossings farther from the school.

Determination of Safe Gap. A safe gap permits a child to perceive that the crossing can be safely made and then to cross with some margin of safety. Most grade school children will require no longer than three (3) seconds to perceive a safe crossing and to react. They will walk at a rate of approximately 3.5 feet per second. If there is a group of children, the entire group must be able to complete the crossing safely.

The pedestrian counts should be made on a normal school day during the heaviest hour of crossing activity in the morning or afternoon, but preferably both.

As indicated, the pavement width, *W*, is the curb-to-curb width as measured at the crossing under study. If the roadway is divided and the center island is wide enough for the maximum sized group of pedestrians to stand on it in safety, the curb-to-curb width of only one roadway is used for *W*. This information can be obtained at the same time the pedestrian group size study is made.

Before the field survey is made to determine pedestrian delay time at the study location, it is necessary to find the minimum length (in seconds) of a gap in traffic which will permit an 85th-percentile group of pedestrians to cross the street of width *W*. This minimum gap in traffic, known as the Adequate Gap Time, *G*, includes both perception and reaction time and the time needed to cross the roadway without coming in conflict with passing vehicles.

Adequate Gap Times in Seconds

Roadway Width, *W*	Number of Rows, *N*									
	1	2	3	4	5	6	7	8	9	10
16-19	8	10	12	14	16	18	20	22	24	26
20-22	9	11	13	15	17	19	21	23	25	27
23-26	10	12	14	16	18	20	22	24	26	28
27-29	11	13	15	17	19	21	23	25	27	29
30-33	12	14	16	18	20	22	24	26	28	30
34-36	13	15	17	19	21	23	25	27	29	31
37-40	14	16	18	20	22	24	26	28	30	32
41-43	15	17	19	21	23	25	27	29	31	33
44-47	16	18	20	22	24	26	28	30	32	34
48-50	17	19	21	23	25	27	29	31	33	35
51-54	18	20	22	24	26	28	30	32	34	36
55-57	19	21	23	25	27	29	31	33	35	37
58-61	20	22	24	26	28	30	32	34	36	38
65-68	22	24	26	28	30	32	34	36	38	40
75-80	25	27	29	31	33	35	37	39	41	43

Source: "A Program for School Crossing Protection," A Recommended Practice of the Institute of Traffic Engineers, *Traffic Engineering*, Institute of Traffic Engineers, Vol. 33, No. 1 (October, 1962), p. 52.

The Adequate Gap Time may be selected from the above table or it may be computed using the following equation (in either case the values for *W* and *N* are those determined in the Pedestrian Group Size Study):

$$G = \frac{W}{3.5} + 3 + (N - 1)2$$

where

G = adequate gap time in seconds

$\frac{W}{3.5}$ = crossing time in seconds (critical width in feet of the pavement to be crossed, *W*, divided by the assumed juvenile pedestrian walking speed of 3.5 feet per second)

3 = pedestrian perception and reaction time (the number of seconds required for a child to look both ways, make a decision, and commence to walk across the street)

(N - 1)2 = pedestrian clearance time (additional seconds of time required to clear large groups of children from the roadway). Children are assumed to cross the roadway in rows of five with two-second time intervals between each row. The clearance time interval is equal to *(N - 1)2* where *N* is the number of rows, 1 represents the first row and 2 the time interval between rows.

After the Adequate Gap Time has been selected, the field study to determine the actual delay time to pedestrians by passing traffic can be undertaken. This study actually measures the time intervals between passing vehicles. Those intervals or traffic gaps that are equal to or greater than the Adequate Gap Time are the periods when children must cross the roadway. The intervals between these gaps are the delay gaps, the sum of which is the Actual Pedestrian Delay.

Either the Graphic Recorder Method or the Metronome Method may be used to determine the gaps in the traffic stream. Naturally, if the entire roadway must be crossed once the pedestrian leaves the curb, traffic flow in all lanes regardless of direction must be considered together.

When the field survey is completed, the total time of all gaps when pedestrians could cross is found by adding together the length in seconds of each gap which was equal to or greater than the Adequate Gap Time, *G*. This figure is known as *t* and is subtracted from the total survey time in seconds, *T*. The following equation is then used to determine the percentage of actual pedestrian delay, *D*:

$$D \text{ (in percent)} = \frac{T - t}{T} \; 100$$

Crossing Classification. Using the data collected during the survey and the procedure for safe gap determination, each crossing is next classified as no protection, limited protection, and additional protection. Each crossing that has a traffic volume for adequate safe gaps is automatically classified as a "No Protection" crossing. School children crossing at a "No Protection" crossing will cross singly or in a small group and they will individually determine when it is safe to cross. A crossing will also be classified as "No Protection" where only a few children cross at the crossing during a complete crossing period.

Crossings which have a traffic volume which approaches the maximum volume for a safe crossing are to be considered for limited protection by the School Coordinating Committee. If such a crossing has few students using it or it is far from the school, it should be classified as "No Protection." If the crossing has a large number of students crossing it, the speeds are high, and if the crossing is close to the school or if the crossing is complex, it should be classified as a "Limited Protection" crossing and the School Patrol should be assigned to assist students crossing at this location.

Crossings which have a substantial number of students using the crossing and where adequate safe gaps do not exist must be classified as "Additional Protection" crossings. This additional crossing protection is normally provided by a trained adult crossing guard or a community policeman until a traffic signal can be installed. Traffic signals should be used to create the necessary gaps only if the traffic volumes and/or other factors at the intersection warrant their installation. The appropriate warrants for signals including warrants for pedestrian signals are clearly defined in the *Manual on Uniform Traffic Control Devices*. Special locations may permit the use of pedestrian-actuated signals to create these gaps.

The School Patrol

School patrols should be carefully selected and thoroughly trained. School safety patrol personnel should be children who are nine years of age or more, and should be especially trained for the patrol job. Parental approval should be obtained in writing before a child is used as a school patrol member. He should be instructed to never direct vehicular traffic in any way. He must stop the children back of the curb or edge of the roadway and allow them to cross *only* when *no traffic* is approaching from either direction. If a stop sign or signal is in place at the crossing, he must control or stop the children until traffic has stopped for the sign or signal. He is to report at once to the principal the names of children who fail to obey his direction or those who fail to cross in an orderly manner. In rural areas, a crossing should not be established where sight distance is less than one fourth of a mile in both directions; however, a speed study should be conducted in order to determine minimum sight distances. School patrols should be used only near the school they attend and they must be adequately supervised.

Recommended training and practices of the school safety patrol are contained in the *Safety Patrol Handbook and Supervisor's Kit* issued by the American Automobile Association. School patrols are to be identified and trained as indicated in this handbook. This material is available from the Montana Automobile Association (see Appendix B).

Adult Crossing Guards

If inadequate vehicular control for school crossings is to be eliminated where it is not warranted, there must be an acceptable practice which will improve driver respect and assure greater safety and protection for the school child who must cross a major street or highway. Such a practice, of course, must be built on a sustained program of safety education by parents and teachers so the child can assume the responsibility for his own safety as early as possible.

Such a practice is the use of adult crossing guards for most locations where additional protection is required at school crossings, at locations where additional safe gaps need to be created. An adult of mature judgment can also inform, train, and guide the very young child in the essentials of good walking and crossing habits. Adult control coupled with adequate warning signs for school crossings will assure driver respect and safety for school children.

Adult guards, however, should be used only on a temporary basis where the crossing requires that safe gaps be created and these adult guards must be thoroughly trained and supervised. A manual titled *Handbook for Adult School Crossing Guards* by the American Automobile Association, Washington, D.C. should be used to develop a program of selection and training of adult guards. This handbook is available from the Montana Automobile Association (see Appendix B). Adult crossing guards can be effectively used as an educational tool for any crossing location.

Traffic Control Devices

Traffic control devices of various types are used in conjunction with school crossings to provide protection to the child and to provide warning and information to the motorist. All markings and signs used should be uniform as specified in the MUTCD of the Department of Highways and should be carefully erected and maintained.

Crosswalks

A crosswalk should be marked and well maintained at all crossings on a school route. Crossings should usually be only across one leg of an intersection and should be painted only on the leg which is a part of the route. At intersections where two or more school routes join, more than one leg of the intersection will be a crossing but in no case should all four legs of an intersection be crossed. Special colors for school crosswalks are not required or desirable as parents and children should be adequately informed of the location of school routes before children use them. Crosswalks should be marked with paint or a more permanent marking.

All crossings by children should be made only within the marked crosswalks and should be rigidly enforced.

School Signs

A lack of uniformity of signs creates disrespect for all signs. Unique signs may create a temporary beneficial effect, but this rapidly disappears and they too are ignored. Only uniform signs should be employed and only those school signs which are necessary should be used. All non-uniform signs are illegal.

The use of adequately designed school signs as warning devices for vehicular traffic at school crossing locations is well recognized by most traffic safety and school officials, and certainly fits into every plan of school crossing

protection and control. The signs determined by the Traffic Unit of the Montana Department of Highways for use in school crossing protection and control are standard signs which can be easily recognized by motorists. These signs are accepted as uniform throughout the United States, and as such enjoy a high degree of voluntary obedience.

The installation of a yellow bouncing ball flasher at a school crossing is always in accordance with current standards or acceptable design principles. This type of device may be used when the following conditions exist: an average of one safe crossing gap per minute during the average peak pedestrian crossing period and a minimum crossing of 50 school-age pedestrians during the crossing period. When any of the following are present, the pedestrians volume portion of the warrant may be 70 percent as determined by engineering judgment: (1) sight distance falls below minimum stopping sight distance for existing approach speeds; (2) approach speeds exceed 45 miles per hour; and (3) the crossing is on a four or more lane facility, except when facility is divided by a median of six feet or more.

Bouncing ball flashers shall be in operation only during those hours in which school children use the crossing.

Pedestrian-Actuated Traffic Signals

A traffic control signal may be warranted at an established school crossing when a traffic engineering study of the frequency and adequacy of gaps in the vehicular traffic stream as related to the number and size of groups of school children at the school crossing shows that the number of adequate gaps in the traffic stream during the period when the children are using the crossing is less than the number of minutes in the same period.

When traffic control signals are installed entirely under this warrant:

1. Pedestrian indications shall be provided at least for each crosswalk established as a school crossing.
2. At an intersection, the signal normally should be traffic-actuated. As a minimum, it should be semi-traffic-actuated, but full actuation with detectors on all approaches may be desirable. Intersection installations that can be fitted into progressive signal systems may have pretimed control.
3. At non-intersection crossings, the signal should be pedestrian-actuated, parking and other obstructions to view should be prohibited for at least 100 feet in advance of and 20 feet beyond the crosswalk, and the installation should include suitable standard signs and pavement markings. Special police supervision and/or enforcement should be provided for a new non-intersection installation.

Underpasses and Overpasses

These special pedestrian facilities are generally warranted only at locations where especially heavy volumes of school traffic must cross a heavy vehicular flow. An underpass or overpass should only be constructed when the problem cannot be solved in some simpler and more economical manner.

Experience has shown that in almost every instance facilities of this type are not voluntarily used by school children. On the other hand if the facility offers a more convenient path than a crossing at street grade, the likelihood of use by school children is good. If the situation, however, requires descending to a different level and then ascending to the original level, or vice versa, the chance of adequate use is not good unless barriers are erected or adult guards, policemen, other adults, or the school safety patrol are used to force school children to use the facility. Ramps, where space and location permit their construction, are usually more satisfactory than steps as they are safer and also permit the use of bicycles and wheel chairs.

Assuming the need exists, decision as to whether to use an overpass or an underpass is generally determined by the physical layout of the area. Overpasses have certain advantages over underpasses in that they usually can be constructed for considerably less money, and excavating work for underpasses is often complicated by sewers, water mains, utility conduits, etc. Underpasses also require lighting, forced ventilation, drainage, and enforcement of sanitary and moral laws.

School overpasses or underpasses may be warranted at specific school crossings only when all of the following conditions are met:

1. When the number of adequate gaps in the traffic stream, during the period the children are using the crosswalks, is less than the number of minutes in that same period of time or when children are prohibited from crossing at grade.
2. When the general conditions that require the school crossing are sufficiently permanent to justify such structures.
3. When an economic comparison between these structures and other methods indicates that overpasses or underpasses are justified from a long range standpoint.
4. When the physical characteristics of the location make such structures feasible.
5. When the initial cost of such improvements does not limit available funds to the point where other essential school crossing protection is neglected.
6. When such structures serve other pedestrians and a sizeable number of school children.
7. When there is no possibility of eliminating the need for such structures by the replanning of school routes or school districts.

Parking Restrictions

All parking should be prohibited on the school side of all streets directly adjacent to the school from before the time children begin to arrive at the school in the morning until after most of the children leave in the evening. No parking or standing or even stopping should be permitted at any time directly in front of any entrance to the school, and these regulations should be strictly enforced. Parents should be instructed to pick up their children at a location which does not require crossing the street and which is not directly in front of any school entrance.

School Hours

The times of school opening and closing should be determined after consideration of all pertinent factors, including the possible minimization of crossing conflicts by scheduling school opening and closing so that walking to and from school does not occur during periods of heavy traffic movements. This is especially important in the early morning hours when darkness and fog may result in poor visibility and a conflict with the morning traffic volume peak. If, for example, the morning peak for traffic occurs just prior to 8 a.m. in a school area, it would be wise to schedule the opening of school so that no child would need to start to school until after 8 a.m.

Conclusion

The solution to the problem of school crossing protection does not rest entirely on the strict control of street or highway vehicular traffic. Rather, the solution to the problem lies more in the development of an informed child as to proper walking habits and as to the hazards which exist on every street and highway. A sound safety education program in the home and school will contribute much more toward the protection of school children, through the development of their own initiative and their own vigilance, than the dependence on protecive devices in the form of signs or signals.

The plans of vehicular warning and control recommended by this manual will augment the necessary education and adult control; all of which, if fitted into a workable program, will increase respect for school crossing protection and definitely provide for the best protection of school children while enroute to and from school as well as at other times of the day.

Appendix A
Montana Law

School Laws of Montana
20-1-408 School Safety Patrols

(1) The trustees of any district or the administration of any private school may organize and supervise school safety patrols for a school under their authority. The purpose of school safety patrols is to influence and encourage other pupils of the school to refrain from crossing public highways at points other than regular crossings and to direct pupils as to when and where to cross highways.

(2) The school safety patrol shall be formed from the children of the school who *are 9 years of age or more or,* if there are none, who are of the highest grade of such school. Before any child may serve on the school safety patrol, the parent or guardian of such child shall give written consent for his child to serve on the school safety patrol.

(3) No liability attaches to a member of the school safety patrol or parent or guardian by virtue of the organization, maintenance, or operation of such school safety patrol because of injury sustained by any pupil.

(4) Identification and operation of school safety patrol shall be uniform throughout the state, and the method of identification and signals to be used shall be as prescribed by the Superintendent of Public Instruction in cooperation with the Montana Division of Motor Vehicles.

(5) Any municipality, city, or town of this state may provide for the training of members of the school safety patrol at any authorized school patrol camp located in this state and may pay the expense necessarily incurred in providing such training out of any funds available for such purpose.